

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF
BILLMERS, ET AL.

S.N. 10/646,429

FILED: 22 AUGUST 2003

FOR: STARCHES FOR REDUCED FAT IN FRIED
FOOD SYSTEMS

GROUP ART UNIT: 1761

EXAMINER: TRAN LIEN, THUY

Commissioner of Patents and Trademarks

Washington, D.C. 20231

DECLARATION

Sir:

I, Dr. Robert L. Billmers, a citizen of the United States, currently residing at 406 Rosemont-Ringoes Road, Stockton, New Jersey 08559, solemnly and sincerely declare as follows.

I am one of the inventors on whose behalf this application was filed in the United States Patent and Trademark Office.

I am familiar with the issues raised in this case.

I graduated from Drexel University, Philadelphia Pa. with a Bachelor in Biological Sciences in 1979 and I hold a Ph.D. in Organic Chemistry from the Drexel University granted to me in 1983.

I currently work for National Starch and Chemical Company (NSC) where I worked in the Natural Polymers Division for over twenty years conducting research on starch modification, processing and formulations. I have given numerous presentations to the

industry and I am the named inventor on over 35 US patents and several hundred non-US patents.


I have read US Patent No. 4,504,509 ("Bell") and conclude that it discloses a crosslinked starch; that is, at least two starch polymers connected by a polyfunctional substituent. This is based on Bell's statements that the starches have been crosslinked and the importance of crosslinking to the Bell invention, Bell's statement that a polyfunctional reagent must be used (a mono-functional reagent would suffice for esterification), Bell's statement that the at least two functional groups react with at least two available hydroxyl groups, the fact that Bell's preferred reagent is phosphorous oxychloride which only crosslinks (as opposed to crosslinking or substituting as with a succinic anhydride), and the fact that the resultant properties recited by Bell are typical properties of a crosslinked starch.

I have also read the above-identified patent application and conclude that it discloses a starch ester; that is, a single starch polymer in which one of the hydroxyl groups has been substituted with an ester group. This is based upon the description, particularly the examples. The examples specify conditions under which starch will be substituted, not crosslinked. For succinic anhydride to crosslink starch, it must either be in the form of a mixed anhydride with acetic anhydride or the reaction temperature must be high (in the range of 350°F). The conditions specified in the examples of the above-identified application are conducted without succinic anhydride and at room temperature. Of all the samples made and evaluated in the preparation of this application, none were seen to have any of the properties of a cross-linked starch (e.g. reduced clarity, settling, increased viscosity, and texture in the cooks). Therefore, it is clear that a substituted starch is formed, not a crosslinked starch.

In conclusion, it is clear to me that the starch of Bell differs from the starch of the above-identified application in that Bell crosslinks starch instead of substituting the starch as in the present invention.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by a fine or imprisonment or both under 1001 of Title 18 of the United States Code and such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed at Bridgewater, NJ, this February 28, 2008.
location date



Dr. Robert Billmers